

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing Of Claims:

1.-10. (Canceled)

11. (Currently Amended) An ultrasonic flow sensor for measuring a volumetric flow rate of a flowing medium through a flow channel, comprising:

an interlaid ultrasonic transducer array situated within a flow cross section of the flow channel and that generates ultrasonic waves that propagate in the flow cross section of the flow channel transversally to a flow direction of the flowing medium,

a linear focus of the ultrasonic waves having at least a first position and a second position, the difference in position being indicative of the volumetric flow rate of the flowing medium,
wherein:

the interlaid ultrasonic transducer array includes an interlaid arrangement of transducer elements that act alternately as transmitting and receiving elements, so that all emitted individual sound waves interfere to form common wave fronts.

12. (Previously Presented) The ultrasonic flow sensor as recited in Claim 11, wherein the individual transducer elements in the interlaid transducer array are decoupled from one another by separating trenches.

13. (Previously Presented) The ultrasonic flow sensor as recited in Claim 11, further comprising:

a reflecting surface associated with the interlaid ultrasonic transducer array and having a radius of curvature, the reflecting surface being separated from the interlaid ultrasonic transducer array by a distance.

14. (Previously Presented) The ultrasonic flow sensor as recited in Claim 13, wherein the radius of curvature of the reflecting surface is twice a tube diameter of the flow channel.

15. (Previously Presented) The ultrasonic flow sensor as recited in Claim 11, wherein the interlaid ultrasonic transducer array is mounted on a wall causing a cross-section narrowing of a partial flow cross section of the flow channel.

16. (Previously Presented) The ultrasonic flow sensor as recited in Claim 15, wherein a constriction of the flow channel causing the cross-section narrowing contains curvatures pointed toward the reflecting surface.

17. (Previously Presented) The ultrasonic flow sensor as recited in Claim 11, further comprising:

an analyzer circuit for scanning the individual transducer elements of the interlaid ultrasonic transducer array using a controllable signal multiplexer; and

an analog signal processor to which the controllable signal multiplexer supplies signals received by the individual transducer elements, wherein the analog signal includes a comparator and a sample-and-hold amplifier connected downstream from the comparator.

18. (Previously Presented) The ultrasonic flow sensor as recited in Claim 11, wherein the interlaid ultrasonic transducer array includes strip-shaped electrodes on a top side that are separated from flat counterelectrodes by a PVDF film.

19. (Previously Presented) The ultrasonic flow sensor as recited in Claim 18, further comprising a seal above the flat counterelectrodes.

20. (Currently Amended) The ultrasonic flow sensor as recited in Claim 11, wherein a shift of [[a]] the linear focus of the ultrasonic waves from a first position to a second position is detected.